HAAGA-HELIA
University of Applied Sciences

Development of Online Product Management System

Case: Next Trading Company

Thesis
BITe
May 2015

HAAGA-HELIA
University of Applied Sciences

Abstract

Date 11 May 2015

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Degree programme
Business Information Technology

Report/thesis title
Development of Online Product Management System

Number of pages and appendix pages
34+5

The aim of the thesis was to develop an online application along with documentation for the Next Trading Company. The company is having import/export as a main business field. It is a new constructed company which is going through development phase. At the moment company uses Microsoft excel to keep record of their vendors, customers and products.The company wanted to have a online base web application instead of system based which could have ability to save vendor, customer and product related information into database and could retrieve those information when needed. The application should have login credential to make it secure.

The study defined the stakeholders, client`s system requirement specifications and different processes which are required for the software development all along with implementation of the system. The screen shot of the different codes are also placed to make description more clear. While developing application the study focused on use cases of system requirement, ER diagram, data requirement, system architecture, prototyping and system implementation.

The study process was started in January 2015 and completed in May 2015. The documentation and application is made according to the client´s system requirement. The main objective was the company got a runable application according to their requirements which could help them in their business and writer acquired a good knowing regarding software development process.

This thesis generated a guideline for developers who want to create ASP.NET web application where they could save and retrieve information.The document also generate a guideline which could taken into account while developing different web application.

Keywords
ASP.Net, System requirement, Prototyping, System architecture

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1 Introduction

1.1 Background

Next trading is a newly built company operating in Finland, which is in under development phase, having import and export as a main business area. Company was constructed in 2014, not an old company. At the moment company is going through development phase, for that they are developing their system.

Right now company used excels to keep record of their customers, products and vendors for example customers who buy the products, supplier where they used to buy different products, product detail and available stock. As it is inconvenient and lengthy process to keep record in excel, which is also not easy to retrieve or access data online. Company wanted to have a system where they could keep their customers, vendors and products record which could be retrieve and access at any time.

The company required an application which could keep record of customer, product, and vendor. Application should have the ability to save customer, product and vendors info into database which could be retrieved and access whenever or wherever needed by company personal. Now company personal want to find out which of the business process could be automate with an application consist of web application and database.

1.2 What is development of online product management system

Development of online product management system is a World Wide Web application/software which could manage customer, product and supplier associated details of a company. Application is made according to the requirement of a company name Next Trading Company.

The application has four different sections to manage customer, product and vendor information.

- Home page
- Customer section
- Product section
- Vendor section

The application has four different user interfaces to support and back up each section but common database will be used for application. So that each section could communicate between in order to save and retrieve information.

Home page has company´s current products details, contact information of the company, product´s inquiry and login option. Normal user will only have access to information available on home page. After login as an administrator company personal will have right to access other three section of the application that is customer, product and vendor section. When the products comes into the company, administrator will save it into product section and update record, vendor who provide these products whose information will be saved into vendor section. When customer send purchase request to the company whose information will be saved on customer section and at the same time admin will check product availability from product section, all these information will be saved into data base.
The development of online product management system is a web application which will communicate with different sections of the company. Here is the overview of the system

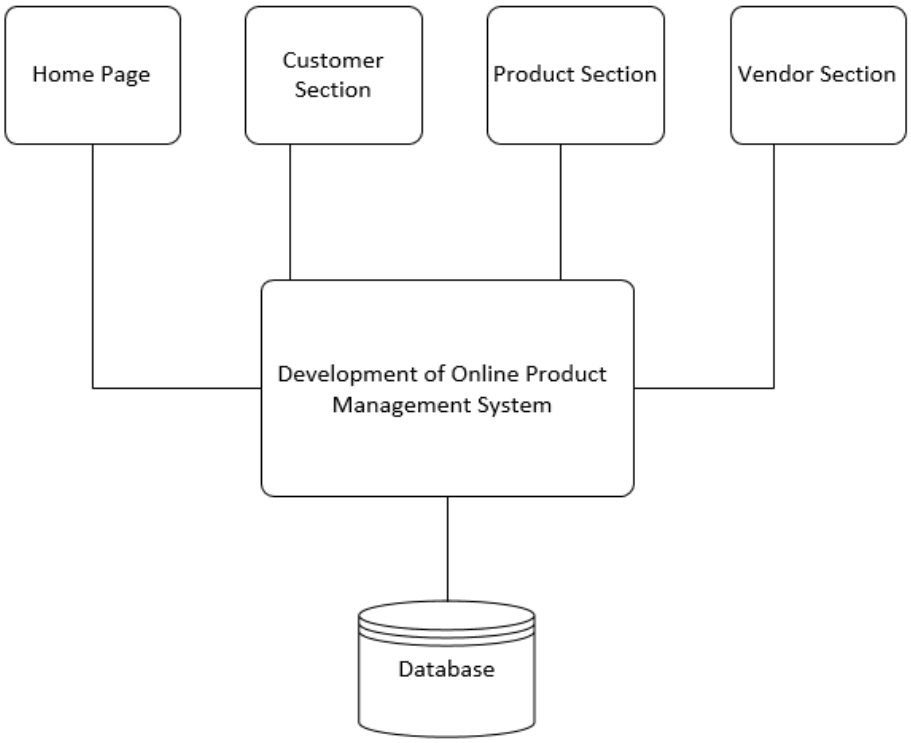

Figure 1: Development of online product management system´s user interface overview.

This is the document which will look the whole information system from the business process point of view, defined requirement of the system, system specification and selected processes that will be automatized.The future expectations and expansions are also taken into consideration while developing this system.

1.3 Objective of the Thesis

The principle objective of the development of application is to enhance the way how next trading company could keep record of clients, items and vendors.

1.4 Application scope

Right now company is using micro soft excel sheet on a single computer to maintain the record of client, item and seller. However the company wants to develop a dynamic application so that they could keep and manage information of different section by using an application. After having this application, the system will replace the current manual system with a new World Wide Web base application. The application have ability to keep record of company´s clients, items and seller whose information could save and retrieve whenever or wherever needed by company personals. In the wake of executing this application all data could easily be control, access, handle and update.

2 Stakeholders

The stakeholders include anyone with an enthusiasm for, or an effect on the outcome of the product. In other word “people or small groups with the power to respond, negotiate with, and change the strategic future of the organization”. (Eden and Ackermann 1998, 117). Here are the main stakeholders of the system

- Chairman of the company
- System administrator

System administrator will be the person who will uphold the web server, database management system, web application and will also be liable for database backup, security and installing new software versions etc.

2.1 Product sponsor

The product sponsor of the application is the chairman of the Next Trading Company. The product´s sponsor has the obligation to provide all data or information and other necessary support while developing this application. The chairman will have right of the acceptance of the product to be developed.

2.2 Thesis sponsor

Being a Haaga-Helia university of applied sciences student, my schools is thesis sponsor. On behalf of Haaga-Helia, thesis supervisor has supported and helped me while developing this application and writing system related documentation.

2.3 End users of the product

Normal users
As it is a web application so normal user could also access this application but only the limited part of the application for example merely the information available on the home page, as home page contain product´s details, company contact information and product inquiry. Normal user will not have access to customer, product and vendors section.

Board members
Next Trading Company´s board members are responsible for entering and maintaining the required information system.

Office assistants
The office assistant will have access to use the system and take care of entering and upholding the desired information system.

3 Terminology

3.1 Definitions

Here are the definition of the system´s conceptual key terms used while development of the system

Terms	Synonyms	Definition
Home page	Main page	Company´s products details, contact information and login option.
Customer section	Client	Customer whose information is going to registered in the system for example, name and contact detail
Product section	Items	Product`s detail which are available in the company or with whom company is dealing with
Vendors Section	Seller/supplier	Company´s supplier related information

Table 1:System terminology definition

3.2 Conceptual structure of the system

The conceptual composition of the system´s key terms is as follow

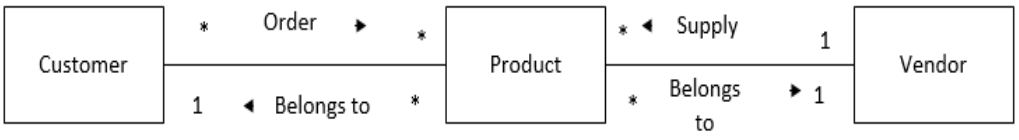

Figure 2: The conceptual design of the development of online product management system

4 System requirement specification

System requirement specification is very important element in the development of an information system as it is the main step in the system design process where normally user`s requirements use to clarified and documented to generate matching specification. Steps, information and activities gathered at this phase impact a lot while developing system, error at this stage may cause error in the design phase. In other word system requirements and specifications are include user interface requirements, design requirements, development measures, functional and performance requirements.

As in this case Next Trading Company is the end user of the development of online product management system, information and requirements that are gathered from company personal`s prospective are as under

As company personal wanted to have

- Company`s products detail at home page
- Company Contact information displayed at home page
- Product related inquiry at home page
- Login option at home page to sign in as an administrator
- Add new customer`s information at customer section
- Could delete existing client.
- Could update information of existing customers
- Add new product`s relevant details at product section
- Could delete specific existing product
- Could update specific or whole product`s info
- Add new vendor and all their possible information at vendor section
- Could update information of existing vendors
- could delete vendor

4.1 Uses cases of system requirement

Use case model defines planned functionality of the new system. It represents interaction between system and user, does not matter user is machine or human. Basically it is a modelling overview which defines how different types of users interact with the system to solve issues, it also identifies objective of the users, the connection between user and system, and necessary behaviour of the system to complete the required objectives. It could contain another use

case`s functionality or could expand another use case with its own behaviour. Use case and actor are the central parts of use case modelling.

Use Cases

When we talk about system requirement, we realize that one or several people or things that have an involvement in the action of that system. They are known as stakeholders of the system. Whereas use case defines how system reacts under certain conditions to a request from one of the stakeholder to deliver specific goal, it basically identify what should be achieved by the system.

Actor

An actor is a person or machine who interacts with the system, or we could say it is a user of the system. It uses use case to perform or deliver certain tasks which are required by the business or system. Stakeholder are the the primary actor whereas supporting actors are external actors which are some time needed to provide service to the system.

4.2 Use case diagram

Here is the use case of Development of Online Product Management System whose main functions are shown in the use case diagram

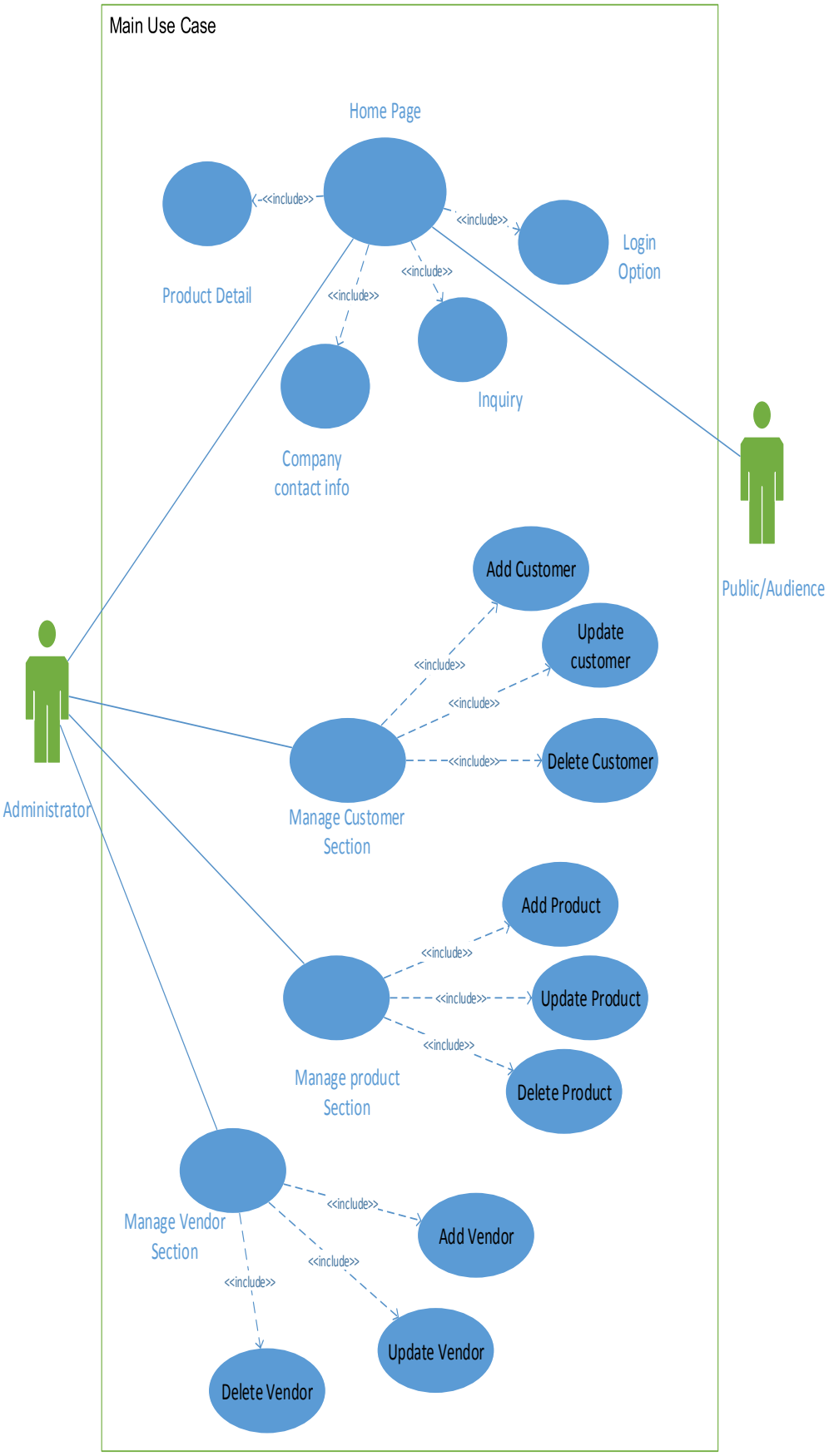

Figure 3:Use case of Development of Online Product Management System

4.3 Use Case Descriptions

Home Page

In the home page there are product`s details with the price, company´s contact information, product inquiry and login option. Normal users have access to all these information except login option. Login option is only for company personal. After logging as an administrator the company official will have access to all the pages as an admin. The admin will have access to manage information of all three sections like customer, product and vendor.

Use Case Name		Home Page
Includes/Excludes		Product Detail, Contact Information, Product Inquiry, Login Option
Overview		-
Trigger		-
Actors		Public, Administrator
Preconditions		-
Post conditions		-
User Action	System Response	
1		Actor navigate to the Home page
	2	Use the desired option
3		System display desired page

Table 2:Home page use case info

Use Case Name		Login option
Includes/Excludes		
Overview		Login to the website
Trigger		-
Actors		Administrator
Preconditions		The actor has login right but has not login yet
Post conditions		The actor is genuine and authorised
User Action	System Response	
1		Actor navigate to the Login page

	2	System displayed login detail
3		Actor give user name and password
	4	System display message actor has login successfully
Other movements		
The user name or password is incorrect		

Table 3: Login option use case info

Vendor Section

The vendor section contained vendor id, vendor name, vendor email address, vendor phone number, location, first consignment date etc. The page also contained update and delete options so the vendor information could be deleted and updated later on as well and vendor´s information will be shown on the list box, where the admin or company personal could also see vendor detail by selecting desired vendor.

Use Case Name		Vendor Section
Includes/Excludes		Add Vendor, Update Vendor, Delete Vendor
Overview		View Vendor information
Trigger		-
Actors		Administrator
Preconditions		The actor has login as an administrator
Post conditions		The detail vendor info are show to the actor
User Action	System Response	
1		Actor open vendor section interface
	2	System display list of current vendors
3		Actor add, update and delete vendor
	4	System display info after changes made
Other movements		
-Actor enter invalid data, system show an error message -The actor could not find desired vendor or desired vendor do not exist		

Table 4: Vendor section use case info

Customer Section

The company official will contact customer via email or phone and will register the new customer information like customer Id, customer name, city, email

address, phone number and search for existing customer. The page also contained update and delete options so the customer information could be deleted and updated later on as well and customer´s information will be shown on the list box, where the admin or company personal could also see customer detail by selecting desired customer.

Use Case Name		Customer Section
Includes/Excludes		Add customer, Update Customer, Delete Customer
Overview		View Customer information
Trigger		-
Actors		Administrator
Preconditions		The actor has login as an administrator
Post conditions		The detail of selected customer info are shown to the actor
User Action	System Response	
1		Actor open customer section interface
	2	System display list of current customers
3		Actor add, update and delete customers
	4	System display info after changes made
Other movements		
-Actor enter invalid data, system show an error message -The actor could not find desired customer or desired customer do not exist		

Table 5: Customer section use case info

Product Section

The product section contained product id, product name, date of purchase, purchase country and vendor id etc. After adding all these information of a new customer, the admin could also search for the desired existing product as well. The page also contained update and delete options so the product information could be deleted and updated later on and product´s information will be shown on the list box, where the admin or company personal could also check product detail by selecting desired product.

Use Case Name		Product Section
Includes/Excludes		Add product, Update product, Delete product
Overview		View product information
Trigger		-
Actors		Administrator
Preconditions		The actor has login as an administrator
Post conditions		The detail of selected product info are shown to the actor
User Action	System Response	
1		Actor open product section interface
	2	System display list of current products
3		Actor add, update and delete products
	4	System display info after changes made
Other movements		
Actor enter invalid data, system show an error message		

Table 6: Product section use case info

5 System Architecture

This system has no subsystem or dependency. It is a web base application. As all user will connect with this application through web browser.
The system architecture`s diagram is shown below

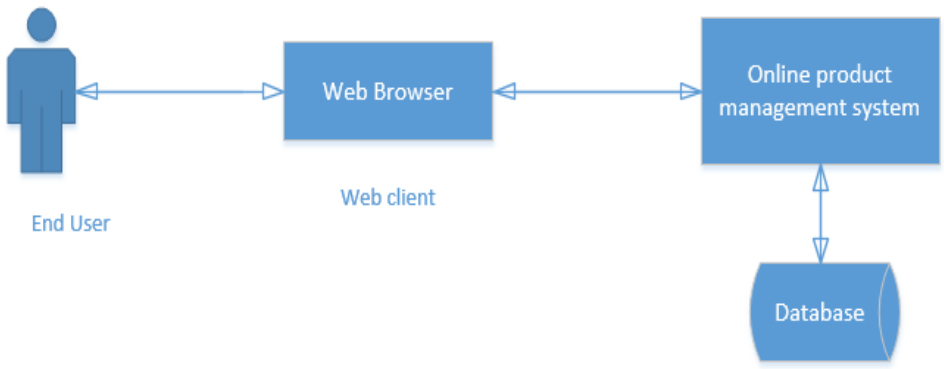

Figure 4:System architecture of Development of Online Product Management System.

In the system architecture diagram end user will interact with web application through web browser, web brwoser will send request to server where the online product management application will be, that application will be connected with the database which will save and retrieve information when needed, so the request send back to the web browser which will display the result.

6 Data Requirements

6.1 Entity Relationship Diagram

Entity relationship diagram (conceptual level class diagram) is a data modelling technique which is used in software engineering to get idea of conceptual data model of an information system
The diagram below describes

- Entities
- Attributes of the entities
- Relationship between the entities

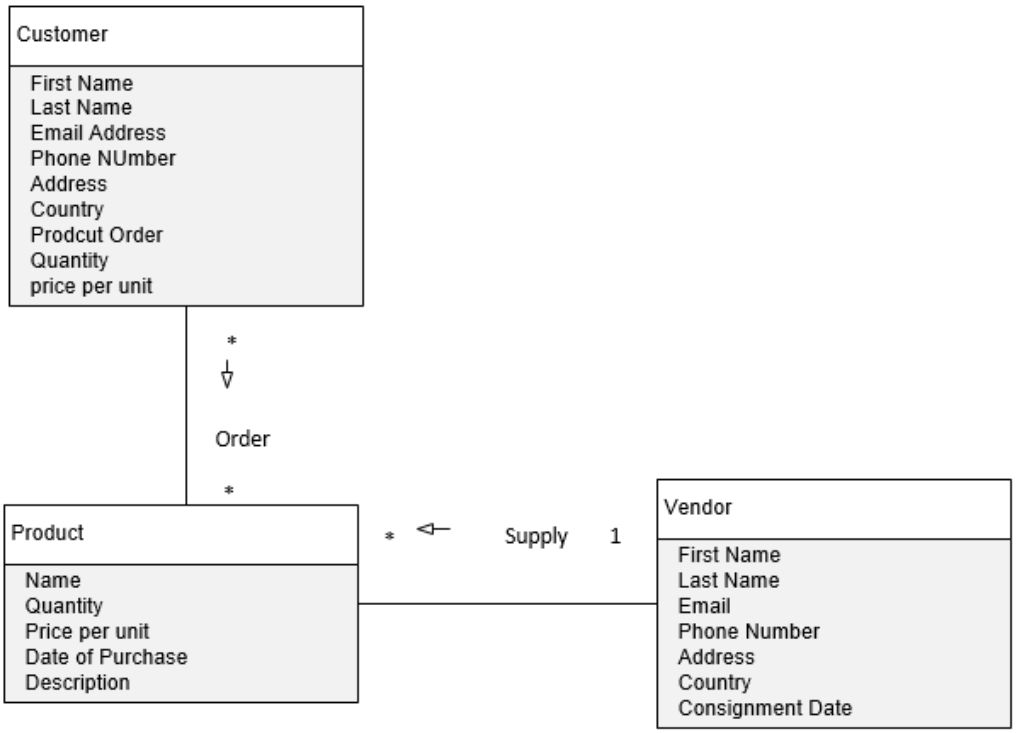

Figure 5:Entity relationship diagram of development of online product management system

6.2 Entity type description

According to the organization`s business need, the information explained in the table are going to be store in the system

Entity Type	Description
Customer	This is a customer section interface, which take customer related information and save it to the data base of the system.
Product	This is a product section interface which has all product related information.
Vendor	This is a vendor section interface which has company`s vendor related information and keep it in the database.

Table 7: Entity type description

6.3 Attribute type description

Customer				
Attribute type	Description	Data Type	Required	Special Domain
First Name	First name of the customer	Text	Yes	-
Last Name	Second name of customer	Text	Yes	-
Email Address	Customer contact Email Address	Text	Yes	Valid email format
Phone Number	Contact number of customer	Text	Yes	-
Address	residential address of customer	Text	Yes	-
Country	Residential country of customer	Text	Yes	-

Product order	Name of the product	Text	Yes	-
Quantity	Quantity of the product	Text	Yes	-
Price per unit	Price of the product	Text	Yes	-

Table 8: Attribute type description of customer

Product				
Attribute type	Description	Data Type	Required	Special Domain
Name	Name of the Product	Text	Yes	-
Quantity	Quantity of the purchased product	Text	Yes	-
Price per unit	Per unit price of purchase item	Text	Yes	-
Date of purchase	Date when product Purchased	Date	Yes	Valid date format yyyy-mm-dd
Description	Description of the product	Text	Yes	-

Table 9: Product`s attribute type description

Vendor				
Attribute type	Description	Data Type	Required	Special Domain
First Name	First name of the vendor	Text	Yes	-
Last Name	Second name of the vendor	Text	Yes	-
Email Address	Vendor contact Email Address	Text	Yes	Valid email format
Phone Number	Contact number of vendor	Integer	Yes	-

Address	residential address of vendor	Text	Yes	-
Country	Residential country of vendor	Text	Yes	-
Consignment Date	First business consignment date	Date	Yes	Valid date format yyyy-mm-dd

Table 10: Vendor`s attribute type description

6.4 Summary of data use

The following table elaborate that how different use case use stored information in the system and which one is using or communicating with the information. It is the clear understanding of what kind of actions processes perform on data.

	Data			
Use Case		Customer	Product	Vendor
customer section	Manage customer	CRUD	-	-
	View Customer	R	-	-
	Add	C	-	-
	Update	U	-	-
	Delete	D		
Product Section	Manage product section	-	CRUD	-
	View product	-	R	-
	Add	-	C	-
	Update	-	U	-
	Delete	-	D	-
Vendor Section	Manage vendor section	-	-	CRUD
	View Vendor	-	-	R
	Add	-	-	C
	Update	-	-	U
	Delete	-	-	D

Table 11: Data CRUD matrix table
CRUD= Create, Read, Update, Delete

6.5 Non functional requirement

John Dooley defines the non functional functional requirement as

> "Non functional requirements are constraints on the services and functions of the program and also expectations about performance. They can include target platform specifications, performance requirements, files access previliges, security requirements and so on. These are usually requirements that may not be visible to the user, but which do effect the user experience."(Dooley 2001, 43)

Some of the requirements are described below which are taken into account while developing this application.

Development environment and tools

Development of online product management system is a web application, it is developed in Microsoft visual studio, ASP.Net, C# and SQL server.

Software documentation

Software documentation are made very carefully by keeping in mind all necessary information, there is no redundancy in the documents, each information is defined once. All use cases and their description are defined in the document.

Standard conformity

The application used English language. While developing application preference was to keep it simple, so that it should be easy to use. The style sheet validated according to the W3C school recommendation.

Content handling

To avoid the security issues only the administrator or office personal are authorized to create, delete and update information from the system. It prevents unauthorized person to spoil data.

Legal Issues

The application is made by keeping in mind the legal issue, there is no personal information kept in the system longer than the law allow, only the

relevant and needed information are kept in the database. Organization is responsible to take care of information.

Maintenance

Company personal are responsible of system maintenance. After completion, application will be delivered to the company so the company will be responsible to contact or communicate with other developers in case of maintenance issues or further development purposes.

7 Database Design

Conceptual structure of the system and entity relationship diagram of the system is used as the further designing of the relational database structure (table, constraints and columns). The database structure is defined in the database diagram and in data dictionary.

7.1 Logical Design

Here is the logical design of the datbase

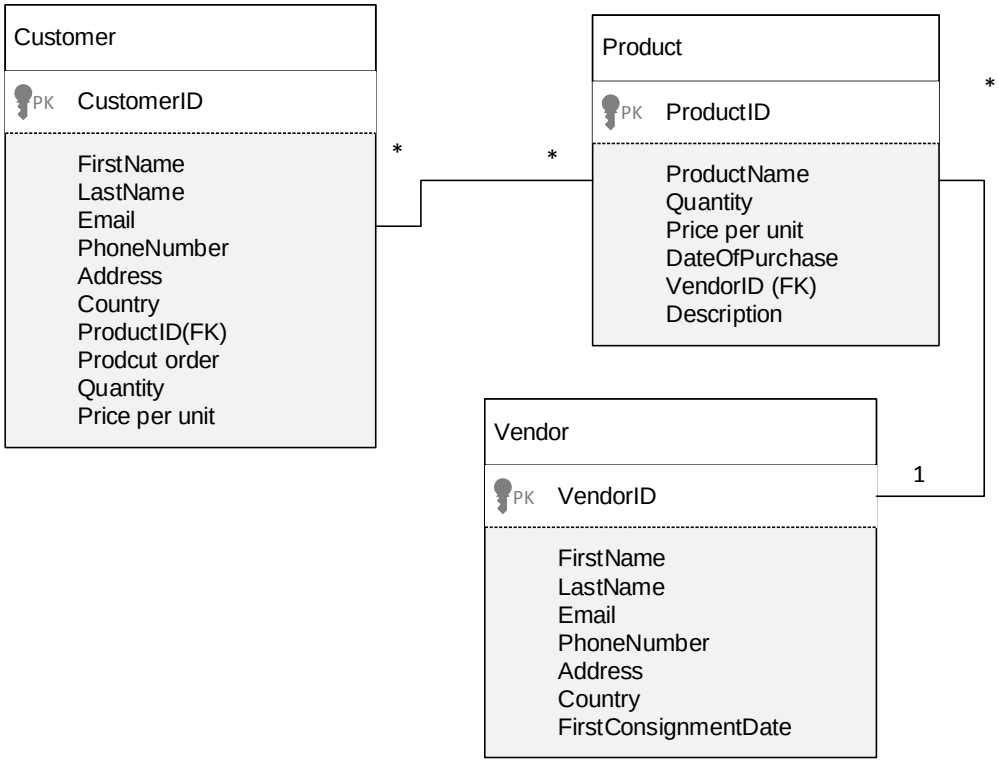

Figure 6: Logical design of system database

7.2 Data dictionary

It is a database management system component which store meta data. It defines structure of the datbase, it records what kind of data is going to storoed in the dabase table keeps description and name of each data element. It contains column name, data types, primary key and foreign key. Below table wise data dictonary is focusing on the column description with data type, key description, special domain and check in database.

Table name: **Vendor**						
Column	Description	Data type	Required	Key	Special domain	Check in DB
VendorID	Surrogate key, unique vendor identifier	Integer	Yes	Primary key	101-9999	Yes
FirstName	first name of the vendor	Varchar(50)	Yes	-	-	-
LastName	Last name of the vendor	Varchar(50)	Yes	-	-	-
Email	Email of vendor	Varchar(50)	Yes	-	Valid email format	-
PhoneNumber	Phone number of vendor	Varchar(50)	Yes	-	-	-
Address	Vendor residential address	Varchar(100)	Yes	-	-	-
Country	Vendor country	Varchar(50)	Yes	-	-	-
First consignment date	date of first consignment	Date	Yes		Valid format date	-

Table 12:Data dictionary of Vendor

Table name:	**Product**					
Column	Description	Data type	Required	Key	Special domain	Check in DB
ProductID	surrogate key, unique Product identifier	Integer	Yes	Primary Key	101-9999	Yes
ProductName	Name of the Product	Varchar(50)	Yes	-	-	-
Quantity	Product`s quantity	Varchar(50)	Yes	-	-	-
Price per unit	Unit price of product	Varchar(50)	Yes	-	-	-
DateOfPurchase	Product purchase date	Date	Yes	-	Valid date format	-
VendorID	Vendor unique indentifier	Integer	Yes	Foreign key	101-9999	Yes
Description	product detail	Varchar(500)	Yes	-	-	-

Table 13: Data dictionary of product

Table name:	**Customer**					
Column	Description	Data type	Required	Key	Special domain	Check in DB
CustomerID	unique customer identifier	Integer	Yes	Primary Key	101-9999	Yes

FirstName	first name of the customer	Varchar(50)	Yes	-	-	-
LastName	Last name of the customer	Varchar(50)	Yes	-	-	-
Email	Email of customer	Varchar(50)	Yes	-	Valid email format	Yes
PhoneNumber	Phone number of customer	Varchar(50)	Yes	-	-	-
Address	Customer residentail address	Varchar(100)	Yes	-	-	-
Country	Customer country	Varchar(50)	Yes	-	-	-
ProductID	Unique product identifier	Integer	Yes	Foreign Key	101-9999	Yes
Product Order	Name of the product order	Varchar(50)	Yes	-	-	-
Quantity	Quantity of order product	Varchar(50)	Yes	-	-	-
Price per unit	unit price of product	Varchar(50)	Yes	-	-	-

Table 14: Data dictionary of customer

8 Prototyping

In software development the concept of prototyping is very important. Basically it is the process of constructing the small scale version of the whole system in order to get accurate information which are required to develop a system. It

can be a graphical design of the system or pencil sketch. It not only display the complete picture of the system but also gives the facility of design checking, after having conversation of client and developer.

As in web development the satisfaction of the client is very important, so it is responsibility of the web developer to ensure client confidence. By mock-up of the application the client could visualize the application or could get real feeling of the system. Now a days it is mostly followed during software development as it is a healthy idea for large system where there is no existing system which could help while determining the system requirements. It gives facility to the customer to evaluate the requirements, upgrade the requirements, could mentioned or add new requirements and could also wrap up the requirements. In this way the client could be confident about the application which could built.

Mock-up building having various advantages. There are the following advantages which are mentioned below

- Client could actively involve in development phase
- Cost effective (changes could made during development stage)
- Easy to identify error
- Could get user feedback quickly which could lead to the better solution
- Missing desires could find easily
- Easy to identify complex or confusing functions

8.1 Home page

Development of online product management ystem have four different userinterfaces. Here I am going to display the mock-up of the different user interfaces which system have.

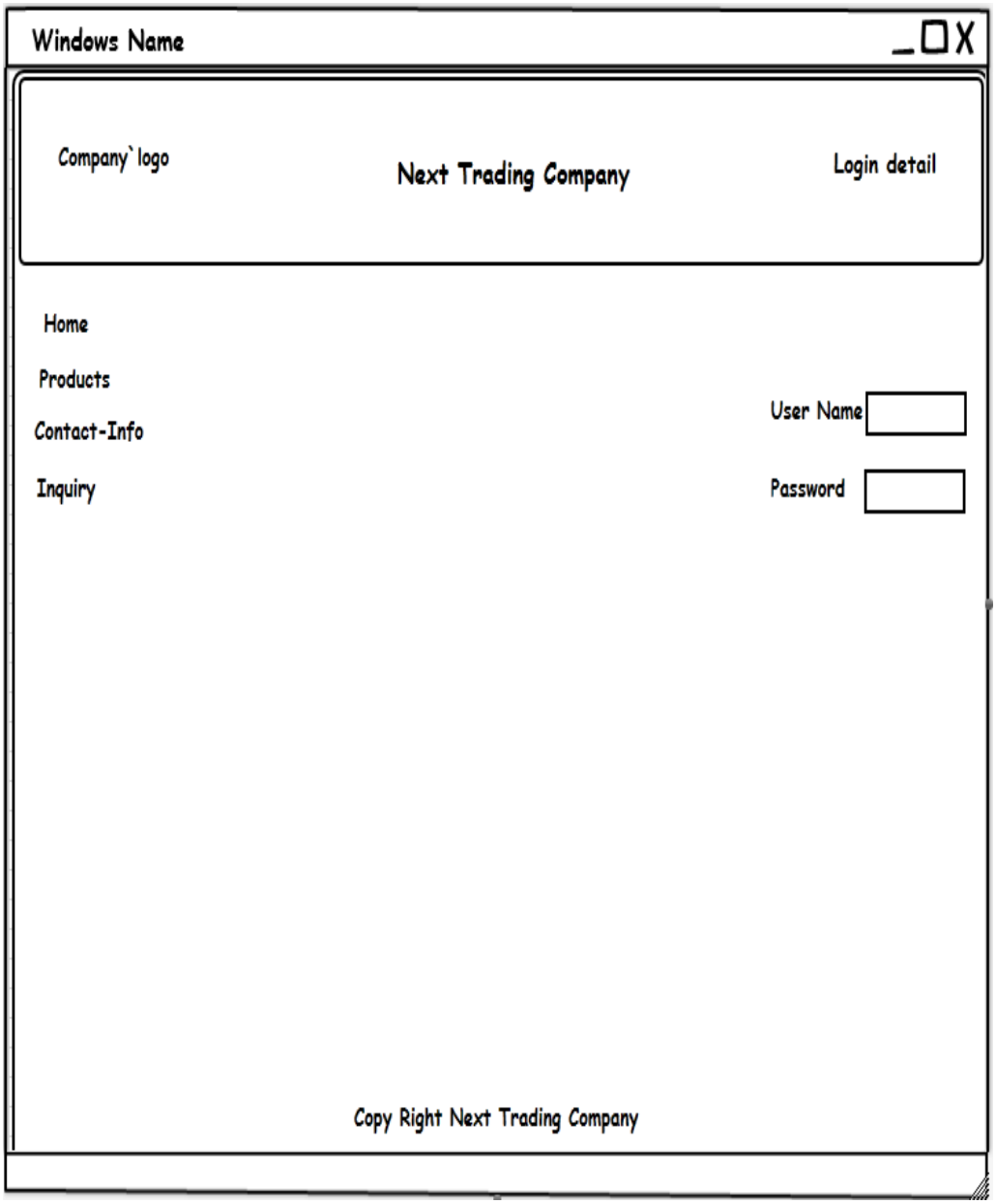

Figure 7: Mock-up of home page

8.2 Vendor section mock-up

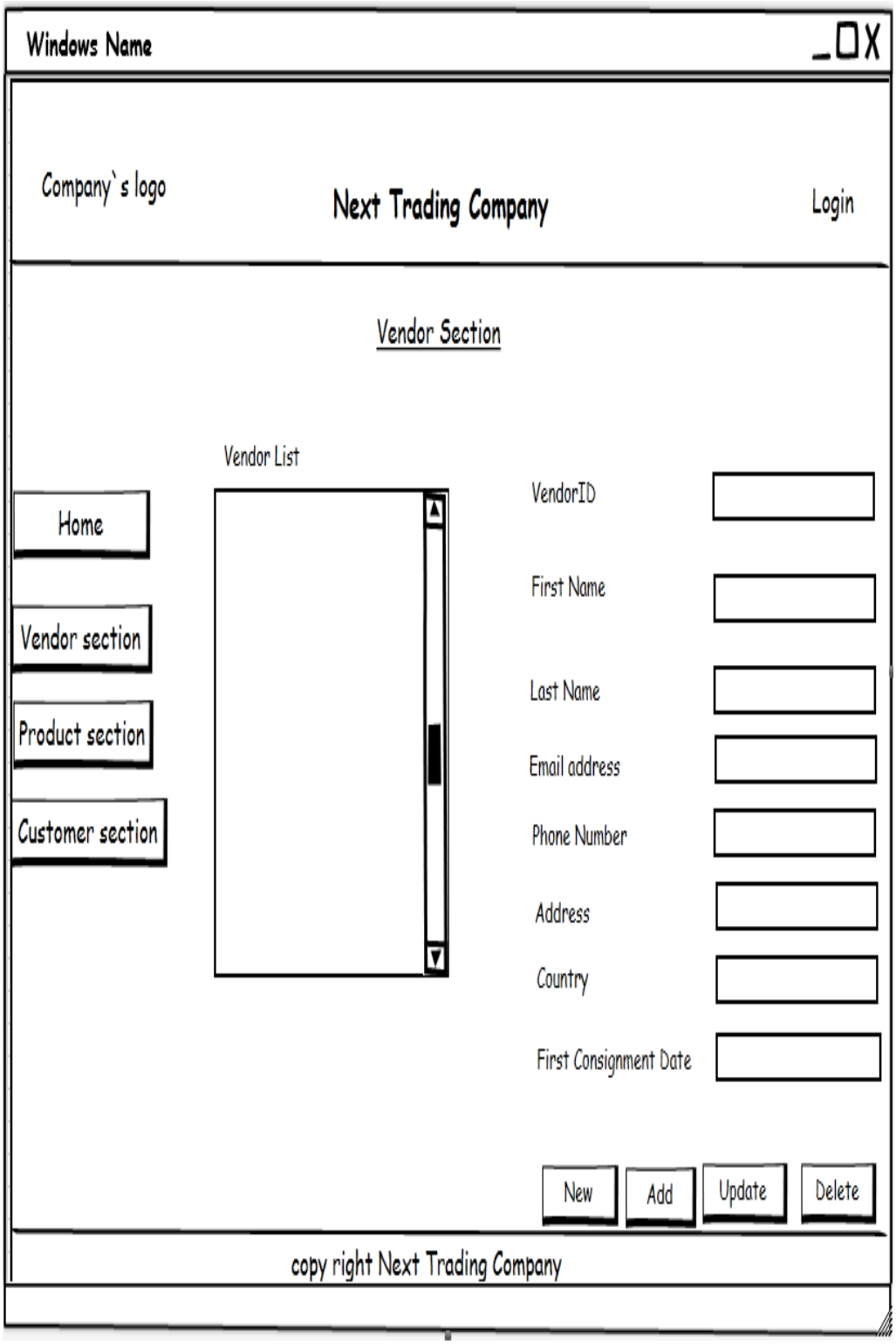

Figure 8: Mock-up of Vendor section

8.3 Product section mock-up

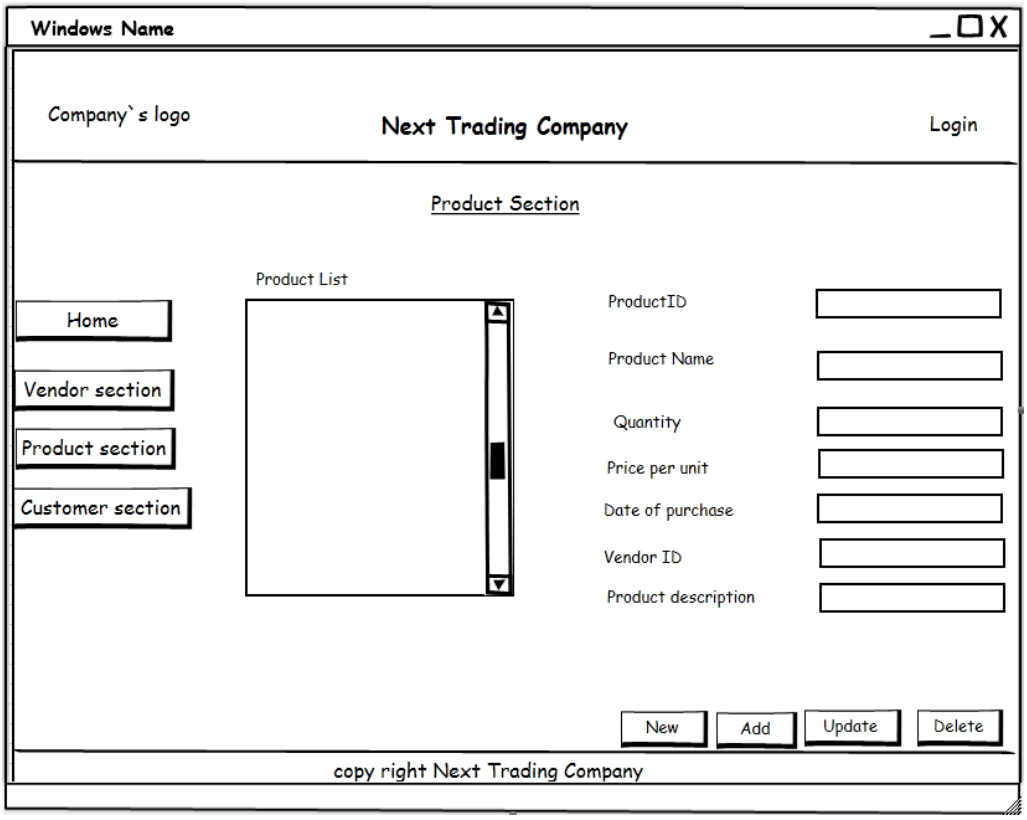

Figure 9: Mock-up of Product section

8.4 Customer section mock-up

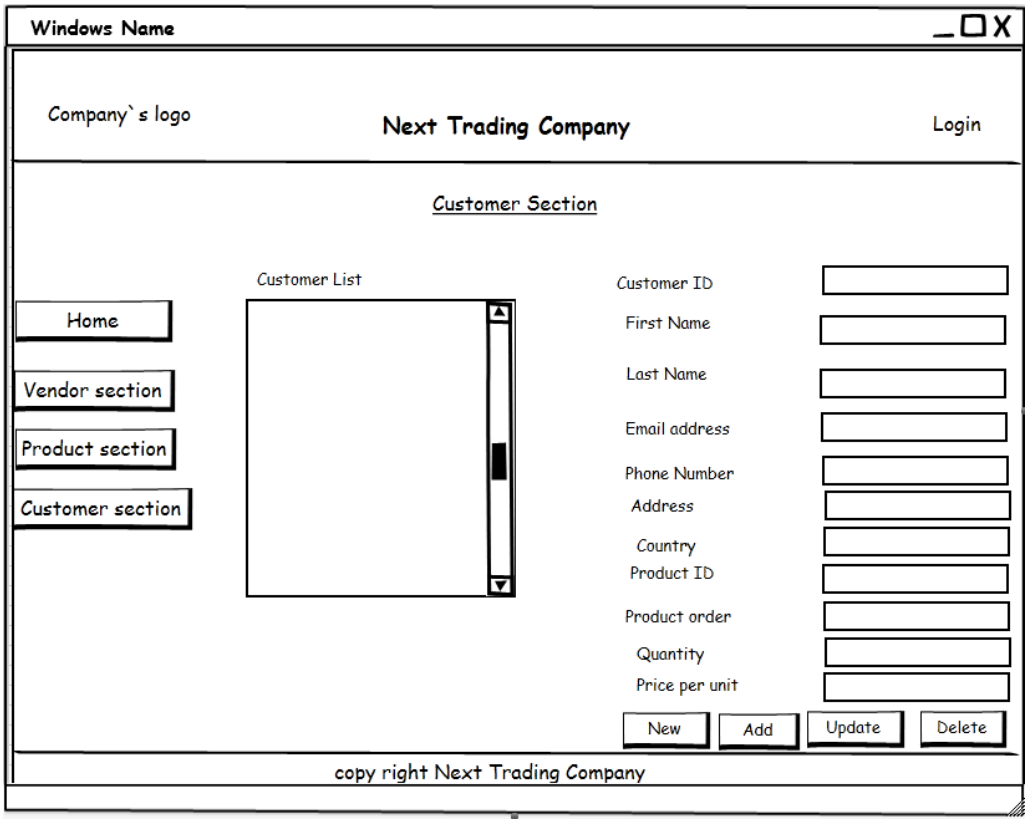

Figure 10: Mock-up of Customer section

9 System implementation

The implementation section of the report will explain the code level architecture of the system. Some part of WebPages share common information so to avoid the redundancy similar information will not repeat. The key section of the system and their main features are described below.

9.1 Login and Logout code implementation

When the page open in the browser it has a login credential which allows adminisatrator to inset, delete and update data in customer, vendor and product sections. The code below define the method of login and logout buttons.

```
protected void btLogin_Click(object sender, EventArgs e)
{
    LoginDAO loginDAO = new LoginDAO();
    LoginRole loginRole;

    loginRole = loginDAO.GetLoginRole(tbUsername.Text, tbPassword.Text);

    if (loginRole == null)
    {
        lbMessage.Text = "Username/password do not match. Try again.";
    }

    if (loginRole != null)
    {
        Session["username"] = tbUsername.Text;

        if (loginRole.Role == "administrator")
        {
            Session["administrator"] = tbUsername.Text;
        }

        lbMessage.Text = "";
        Page.Response.Redirect("HomePage.aspx");
    }
}
/// btLogin_Click: DO LOGOUT
protected void btLogout_Click(object sender, EventArgs e)
{
    Session["username"] = null;
    Session["administrator"] = null;
    Page.Response.Redirect("HomePage.aspx");
}
```

Figure 11: Sample code of login and logout buttons

9.2 Page Load

Each time when the page load the code behind file will run and two methods viewStateNew and create Vendor List will be run first. Login credential is required for all the three vendors, product and customer sections but in the other two pages product and customer section the populateDropDownList method will also run along with. The sample codes are mentioned below.

```
protected void Page_Load(object sender, EventArgs e)
{

    checkLogin(true); // true = login is required for accessing this page

    if (this.IsPostBack == false)
    {
        viewStateNew();
        createVendortList(); // Populate Department List for the first time
    }

    addButtonScripts();


}
```

Figure 12: Sample code of page load in the browser

9.3 Adding vendor into database

The code below are inserting vendor information into batabase. At first it will make connection with the database then the data will be inserted into database.

```
public int InsertVendor(vendor Vendor)
{
    try
    {
        myDatabase.Open(myConnectionString);

        if (vendorExists(Vendor.VendorId) == true)
        {  return 1;}
        String sqlText = String.Format(
          @"INSERT INTO Vendor (vendorId, firstName, lastName,emailaddress,
            phoneNumber,address,country,firstConsignmentDate)
            VALUES ({0}, '{1}', '{2}', '{3}', '{4}','{5}','{6}','{7}' )",
          Vendor.VendorId  ,
          Vendor.Firstname ,
          Vendor.Lastname,
          Vendor.EmailAddress,
          Vendor.PhoneNumber,
          Vendor.Address,
          Vendor.Country,
          Vendor.FirstConsignmentDate
            );
        myDatabase.ExecuteUpdate(sqlText);

        return 0;  // OK
    }
    catch (Exception)
    {
        return -1; // An error occurred
    }
    finally
    {
        myDatabase.Close(); }}
```

Figure 13: Sample code of adding Vendor information into database

9.4 Retreiving data

The code below define the retreval of the data from database.

```
public vendor GetVendorByVendorId(int vendorId)
{IDataReader resultSet;
    try
    { myDatabase.Open(myConnectionString);
       String sqlText = String.Format(
       @"SELECT vendorId, firstName, lastName,emailaddress,phoneNumber,
       address,country,firstConsignmentDate FROM Vendor
       WHERE clubId = {0}", vendorId);
        resultSet = myDatabase.ExecuteQuery(sqlText);
        if (resultSet.Read() == true)
       {  vendor Vendor = new vendor ();
        Vendor.VendorId = (int)resultSet["clubId"];
        Vendor.Firstname = (String)resultSet["firstName"];
        Vendor.Lastname = (String)resultSet["lastName"];
        Vendor.EmailAddress = (String)resultSet["emailAddress"];
        Vendor.PhoneNumber = (String)resultSet["phoneNumber"];
        Vendor.Address = (String)resultSet["address"];
        Vendor.Country = (String)resultSet["country"];
        Vendor.FirstConsignmentDate = (DateTime)resultSet["firstConsignmentDate"];
            resultSet.Close();
            return Vendor;}
             else
        {
            return null; // Not found
        }}
    catch (Exception)
    {
        return null;  // An error occurred
    }
    finally
    {
        myDatabase.Close();}}
```

Figure 14: Sample code of retreiving data from database

9.5 Delete data

The code below define the procedure, how the vendor information will be deleted from database.

```
public int DeleteVendor(int vendorId)
{
    try
    {
        myDatabase.Open(myConnectionString);

        if (vendorExists(vendorId) == true)
        {
            return 1;
        }

        String sqlText = String.Format(
          @"DELETE FROM Vendor
             WHERE vendorId = {0}", vendorId);

        myDatabase.ExecuteUpdate(sqlText);

        return 0;   // OK
    }
    catch (Exception)
    {
        return -1; // An error occurred
    }
    finally
    {
        myDatabase.Close();
    }
}
```

Figure 15: Sample code of deleting data

9.6 Update information

When the vendor information will be updated the folwing code will execute which will make connection with the database and save updated informaion over there.

```
public int UpdateVendor(vendor Vendor)
{try
    { myDatabase.Open(myConnectionString);
          String sqlText = String.Format(
          @"UPDATE Vendor
            SET  firstName = '{0}',
                 lastName    =  '{1}',
                 emailAddress = '{2}',
                 phoneNumber='{3}',
                 address='{4}',
                 country='{5}',
                 firstConsignmentDate='{6}'
                WHERE vendorId     = {7} ",
            Vendor.Firstname,
           Vendor.Lastname,
           Vendor.EmailAddress,
           Vendor.PhoneNumber,
           Vendor.Address,
           Vendor.Country,
           Vendor.Firstname,
           Vendor.VendorId);
          myDatabase.ExecuteUpdate(sqlText);
    return 0;  // OK
    }
    catch (Exception)
    {
        return -1; // An error occurred
    }
    finally
    {
        myDatabase.Close();  }
    }
```

Figure 16: Sample code of update information into database

10 Conclusion

The thesis is based on developing a web base online application for Next Trading Company. The company is the solely owner of the application. The goal of the thesis was to develop a running application with proper documentation. I am the solely writer of the documentation and developer of the system.

The aim of the thesis has been achieved, the application made according to the requirement mentioned by the company supervisor. The application is ready to use and further development or enhancement could also be possible. For clear understanding of the reader the screen shot of different programming codes which will communicate with database and other part of the appli-

cation are also placed in the report. The application has login credential and allow user to view, insert, update and delete information.

11 Refrences

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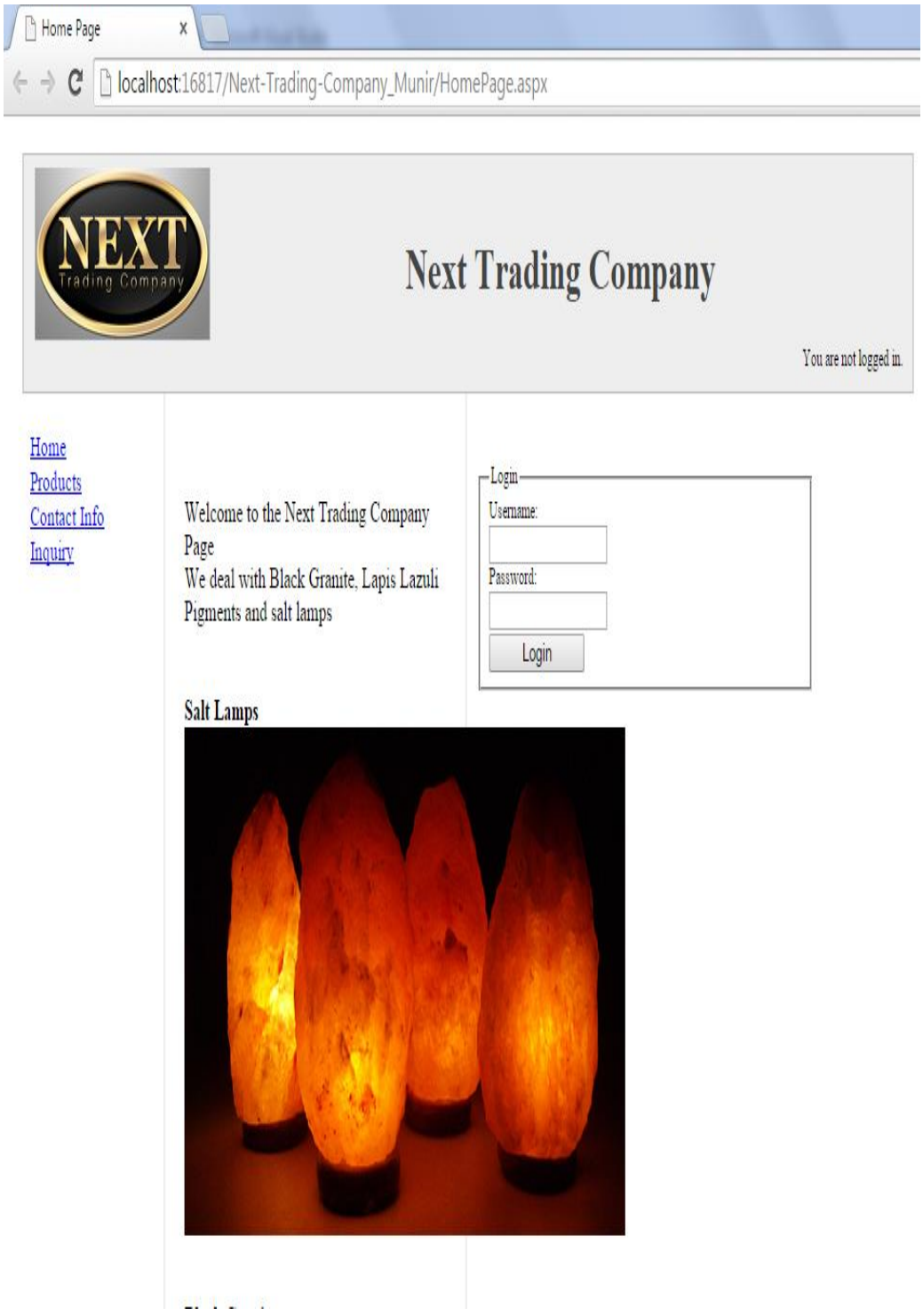
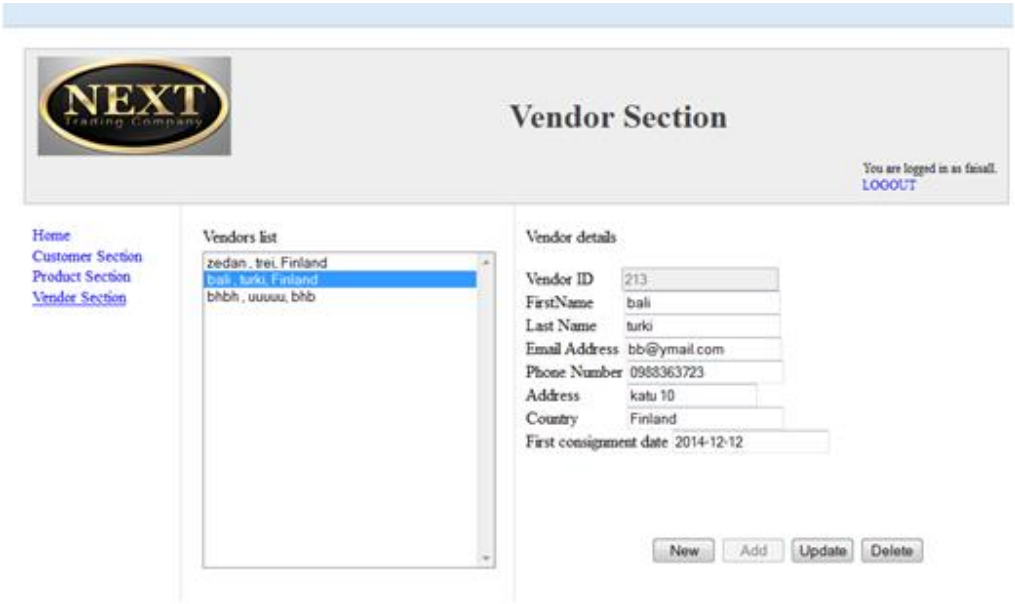
12 Attachments

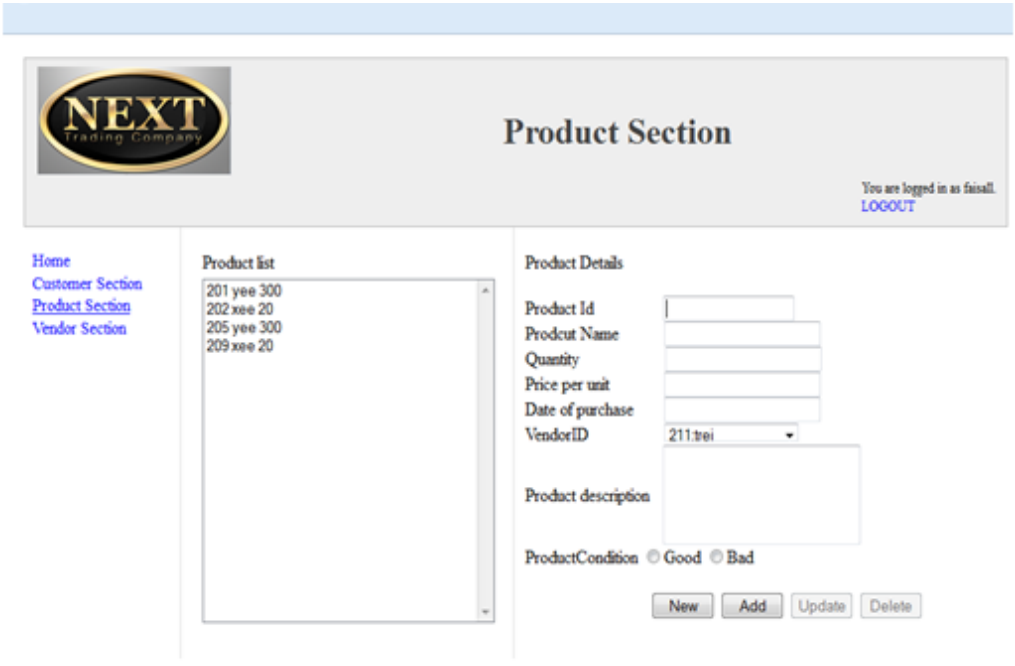
Screen shot of the home page, before the administrator get login.



Screen shot of the vendor section after the administrator get login



Screen shot of product section



Screen shot of customer section.